Impulsivity and Self-Esteem as Predictors of Alcohol Use among Irish Adults

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Abstract

This study investigates the relationship between alcohol use, impulsivity and self-esteem among a population of Irish adults. Previous research (e.g. Department of Health, 2012, Hope, 2008) has highlighted the negative impact of alcohol on Irish society, linking excessive drinking with road traffic accidents, crime, increased risk of certain cancers and gastrointestinal problems. This research identified a need for research that investigates the specific influences on excessive drinking in Irish society (Hope, 2008). The current study compares drinking behaviour among different age groups and genders, and investigates if alcohol consumption is predicted by levels of impulsivity and self-esteem.

Data was collected using the Alcohol Use Inventory (Horn, Wanberg & Foster, 1990), the Barratt Impulsivity Scale (Patton, Stanford & Barratt, 1995) and the Rosenberg Self-Esteem Scale (Rosenberg, 1965). Using a regression analysis, it was found that levels of impulsivity predicted levels of hazardous drinking behaviour with moderate strength $(F(1,107)=23.19, R^2 =0.18, p=0.001)$ (BIS_total, beta= 0.42, p=0.001). However, a further analysis suggested this relationship is not present in women aged over 30 $(F(1,11)= 0.55, R^2 =0.05, p=0.47)$ (BIS_total, beta= 0.22, p=0.47). Additionally, a 2-tailed Spearman's Rho test for correlation, found no relationship between self-esteem and alcohol use among the current sample (rs(114)= -0.02, p=0.84).

Section 1: Introduction

The impact of excessive alcohol use on Irish society has been extensively outlined in reports by the Department of Health (2012) and Health Service Executive (Hope, 2008). This includes a connection between alcohol use and: road traffic accidents, crime, increased risk of certain cancers and other health problems. The reports suggest binge-drinking in the general population is a significant problem, and further research into drinking among the general population and subgroups within Irish society is needed.

Previous psychological research, conducted in countries other than Ireland, has suggested a link between excessive alcohol use and high levels of impulsivity, and high and low levels of self-esteem. In addition, differences between age groups and gender were noted, with research consistently finding that young men drink more than other groups.

This study aims to investigate if there is a relationship between impulsivity, self-esteem and levels of alcohol consumed, in an Irish population. In addition, differences in gender and between age groups will be investigated.

1.1. *The effects of Alcohol Use*

Alcohol is the most widely consumed drug in Western Europe (Edwards, 2002). Light to moderate consumption has been shown to have health benefits such as a 25% lowered risk of heart attack (Rimm, Williams, Fosher, Criqui & Staniffer, 1999), a lower risk of developing type 2 diabetes (Ajani, Hennehens, Spelberg & Manson, 2000) and a lower risk of developing Alzheimers disease (Ruitenberg et al. 2002). However, much of the consumption of alcohol in Ireland is excessive, leading to many health and social problems (Department of Health, 2012). In Ireland, one quarter of the population binge drink on a weekly basis, giving Ireland the highest rate of binge drinking in Europe (Department of Health, 2012).

The negative effects of alcohol can be classed as direct and indirect hazards (Brannon & Feist, 2009). Direct hazards refer to the harmful physical effects alcohol can have when consumed in large amounts. Indirect hazards refer to the consequences of impaired psychological and physiological functioning associated with excessive alcohol use.

The most common direct hazard of alcohol is damage to the liver. Alcohol can erode cell membranes in the liver which can develop into scarring (Brannon & Feist, 2009). This can lead to an accumulation of non-functional scar tissue in the liver in a condition known as cirrhosis of the liver. The effects of cirrhosis of the liver are irreversible, leading to impairment in the functioning of the liver, which can lead to death (Brannon & Feist, 2009).

Prolonged heavy use of alcohol has also been identified as a risk factor for neurological damage (Harper & Matsumoto, 2005). Heavy drinking can cause a dysfunction in the absorption of thiamine (Brannon & Feist, 2009), which is one of the B vitamins. This can lead to brain abnormalities that produce the symptoms of Korsakoff syndrome. This is characterised by severe memory impairments, disorientation and an inability to acquire new information.

Among other direct hazards of alcohol use is its contribution to the development of certain cancers (Brann & Feist, 2009). Bagnardi, Blangiardo, La Vecchia & Corrao, (2001) conducted a meta-analysis of over 200 studies that showed a link between cancer and alcohol use. Excessive prolonged alcohol use poses the strongest risk of cancers of the oral cavity, pharynx, esophagus and larynx (Brannon & Feist, 2009). In addition, heavy alcohol use has also been linked to cancers of the stomach, colon, rectum, liver, breast and ovaries (Brannon & Feist, 2009).

Alcohol use has been linked to cardiovascular disease. Although light to moderate consumption of alcohol has been associated with lower risk of cardiovascular disease

(Brannon & Feist, 2009), heavy drinking has been shown to damage the heart (Standridge, Zylstra & Adams, 2004), increasing the risk of disease.

Indirect hazards result from alcohol's effects on aggression, judgement and attention. These impairments of cognition and co-ordination can lead to unintentional injuries, which are a leading cause of death worldwide (Rehn et al., 2003). Approximately 32% of unintentional injuries are from alcohol use (Brannon & Feist, 2009). A leading cause of unintentional injuries is drink driving accounting for approximately 30% of all road deaths (Brannon & Feist, 2009).

Taylor & Leonard (1983) showed that moderate and high levels of aggression were found 30% of drinkers who had consumer moderate to heavy levels of alcohol. In addition, Martin (2010) found that in 66% of homicides, sexual assaults and domestic violence the perpetrator had been drinking.

Alcohol use has also been shown to impair people's decision making. Sayette, Kirchner, Moreland, Levine & Travis (2004) found that people made riskier decisions after consuming alcohol. This can lead people to engage in potentially harmful behaviours. For example, MacDonald, Zanna & Fong (2000) found that men had more favourable attitudes to unprotected sex when under the influence of alcohol.

1.2. *Alcohol Use in Ireland*

The Steering Report (Department of Health, 2012) found that half of Irish adults have harmful drinking patterns (e.g. binge drinking, drinking more than the recommended units per week). This equates to 1.5 million adults in Ireland who engage in harmful drinking. The negative impact of alcohol on Irish society has been far reaching affecting health, crime, road

traffic accidents, relationships, mental health, families and levels of domestic abuse (Hope, 2008, Department of Health, 2012).

Statistics from the health board show a link between alcohol use and hospital admissions, injuries, deaths and alcohol-related diseases. Figures illustrate the strain put on primary healthcare services, with the cost of treating alcohol-related illnesses in 2007 estimated to be €1.2 billion (Hope, 2008). In 2008, an average of 88 deaths per month were related to the effects of excessive alcohol use. Alcohol related illness and injuries also result in 2,000 beds in Irish hospitals being occupied each night in acute Irish hospitals. Furthermore, between 1994 and 2003, cancer of the liver increased by 10.7% in females and 7.4% in males (Hope, 2008).

A national study (Hope, 2008) found that 28% of those presenting at accident and emergency departments presented with an injury or illness related to alcohol use. 3/4s of those presenting with alcohol related injuries or illnesses were men aged between 18 and 29. These figures illustrate the harm caused to people's health and the strain put on healthcare services as a result of alcohol use. In addition, the bias in the rates of admissions to A & E towards young men, suggests analysing the differences between this subgroup and the general population would be beneficial.

Figures suggest that alcohol has been a cause of and a response to difficulties in families and relationships. 40% of men and 20% of women who report being in distressed relationships, report drinking heavily as a coping mechanism (Hope, 2008). The Steering Report (Department of Health, 2012) found that alcohol use was a factor in 25% of cases of marital disharmony and that 27% of victims of domestic violence state that alcohol was a contributory factor in the abuse they experienced.

Alcohol related crime is also a significant problem in Ireland. The Steering Report (Department of Health, 2012) notes that alcohol related crime cost the economy €1.19 billion in 2007, and that almost half of the perpetrators of homicide were intoxicated when committing their crime. In addition, the HSE (Hope, 2008) report that 97% of cases of public order offences involved an intoxicated individual.

Research has also suggested alcohol use has a negative impact on the Irish economy. In 2007, economic output lost due to alcohol use, was estimated to be €527 million in 2007 (Department of Health, 2012). In addition, research by Irish Business and Employers Confederation suggests that absenteeism due to alcohol use costs Irish businesses €1.5 billion annually (IBEC, 2004).

Between 1990 and 2006, 2,642 road deaths were alcohol-related, with alcohol being involved in 36.5% of all fatal road deaths (Hope, 2008). The rate of alcohol related driver deaths was largest for 19 to 34 year olds and was significantly higher among males than females. In addition to fatal road crashes, alcohol was found to be a contributory factor in 38% fatal pedestrian road traffic deaths. The financial cost of alcohol related road deaths was estimated to be €530 million in 2007. Although, the figures regarding alcohol related road deaths are alarming, there has been a 34% reduction in road deaths since the introduction of mandatory alcohol testing in 2006 (Department of Health, 2012). This illustrates the impact public policy can have on alcohol use. The Steering Report (Department of Health, 2012) suggests that other public initiatives, such as using social media to communicate the dangers of alcohol use to younger people could be effective for reducing alcohol related harms in this group.

The statistics relating alcohol to crime, economic output and road traffic accidents suggest a need for preventative measures to redress the negative impact alcohol misuse has in

these areas. The reduction in road traffic accidents after the introduction of mandatory alcohol testing highlight the potential impact of public initiatives in these areas (Department of Health, 2012). Research that identifies those most likely to engage in heavy drinking could be used to develop more effective initiatives to curb excessive drinking.

In the area of mental health, alcohol use has been linked to acts of suicide and poor coping strategies for dealing with depression and anxiety. A study that analysed data from multiple regions in Ireland, found that alcohol was present in the blood of over half of those who committed suicide (Bradford, O'Farrell & Howell, 2006).

Furtherore, Hope (2008) reports that among Irish students, those who regularly engage in heavy drinking are less likely to use positive coping strategies when dealing with anxiety or depression. Positive coping strategies include seeking social support and, if appropriate, taking constructive action to deal with a source of anxiety (Taylor, 2009). However, students may substitute positive coping strategies with alcohol use, in an attempt to control anxiety or depression (Hope, 2008). In addition, students who engaged in regular heavy drinking were more likely to have problems which may cause anxiety or injury such as financial trouble, fights, unprotected sex and accidents (Hope, 2008).

The Health Service Executive (Hope, 2008) reports that 57% of respondents of a survey on alcohol harm stated that they were worried about someone else's drinking. Many people also reported harm due to others drinking including verbal abuse (29%), arguments with friends or family members about people's drinking (20%) and being a passenger in a car being driven by someone who has been drinking (18%). With the exception of sexual assault and relationship problems, men were more likely to report being negatively impacted by someone else's drinking than women. The findings from this survey suggest that there is concern among the general public about alcohol use, and that men are more likely to report

such problems. This reinforces the need for further research in the area, and to investigate the differences in the drinking patterns of men and women.

The effects of alcohol misuse on Irish society have led the government and health board to state there is a need for further research into alcohol use in Ireland, with a HSE report (Hope, 2008) stating that there is still gaps in our understanding in this area. They suggest that further research into drinking among the general public and subgroups in Irish society is needed to identify those most at risk of abusing alcohol and to develop effective interventions to deter the excessive use of alcohol.

1.3. *Alcohol use & Impulsivity*

Impulsivity has been defined as "a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to the impulsive individuals or to others" (Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001, p. 1784). This predisposition has been linked to problems controlling and inhibiting impulses, leading individuals to act without regard for the consequences of their actions. This often leads to risky behaviours such as compulsive gambling, overeating, overspending and alcohol and drug abuse.

Patton, Stanford & Barratt (1995) proposed 3 distinct areas of impulsivity. These are attention (difficulty focusing on a task), motor (a tendency to act, "on the spur of the moment" (Patton, et al., 1995)) and nonplanning (difficulty planning and adhering to tasks, and controlling one's behaviour to achieve a goal). These characteristics can lead an individual to be distractible, undisciplined and vulnerable to engaging in risky behaviours without forethought.

Quantitative and experimental research, undertaken outside of Ireland, strongly suggest a link between impulsivity and excessive alcohol use. This research has consistently found that people who score high on measures of impulsivity have been found to be more likely to misuse alcohol (e.g. Blonigen, Timko, Finney, Moos & Moos, 2011, Burton, Pederson & McCarthy, 2012). Much of this research focused on British and American college students and alcoholics, finding that students who were more impulsive drank more excessively than their peers with lower levels of impulsivity, and that alcoholics tend to have higher levels of impulsivity than the general population (Blonigen, Timko, Finney, Moos & Moos, 2011).

Lawrence, Luty, Bogdan, Shakian & Clark (2009) conducted a study of a U.K. sample, that measured the response inhibition of outpatients receiving treatment for alcohol dependency and a group of healthy controls. Response inhibition is a core part of executive function, involving several brain regions that include neural circuits in cortical and subcortical structures. It has been suggested that deficits in response inhibition may explain why some individuals are more impulsive than others, as they may be more easily swayed by their impulses and more likely to act "on the spur of the moment" (Lawrence et al., 2009).

Lawrence et al. (2009) measured response inhibition using a stop-signal test and found that those dependent on alcohol had slower reaction times than healthy controls. This slower reaction time suggests individuals with high impulsivity take longer to inhibit their responses, suggesting that inhibitory control is a component of impulsivity. In addition to having slower reaction times, Lawrence et al. (2009) found that those with alcohol dependence scored higher on the Barratt Impulsiveeness Scale, Version 11 (Patton et al., 1995) than healthy controls.

A stop signal test measures a participant's ability to inhibit responses by having them press a button when a sign is presented on a screen and then to cease (inhibit) responding when another stimulus is presented. In their stop-signal test, Lawrence et al. (2009) instructed participants to press the right button on a keypad when an arrow pointing right appeared on a screen, and to press the left button when an arrow pointing left appeared on a screen. In 25% of the presentations of an arrow an auditory stop signal was heard, indicating to participants they must refrain from responding to the presentation of an arrow. The speed at which they stop responding can be measured by how quickly they refrain from pressing the keypad. Individuals who were dependent on alcohol were slower to inhibit their responses than health controls, suggesting they have deficits in inhibitory control. This suggests these individuals have higher levels of impulsivity than controls. This may make it difficult for such individuals to inhibit their impulse to drink alcohol, which may have led them to develop a dependency on alcohol.

In a study on a population of American students, Burton, Pederson & McCarthy (2012) found that respondents who scored highly on measures of impulsivity were more likely to engage in heavier alcohol use. They suggest that individuals who are more impulsive are more responsive to positive implicit associations related to alcohol. Implicit associations are the associations someone relates to a stimulus. An example of a positive association could be that alcohol and fun are related. Subjects completed an Implicit Association test where they assigned attributes (either positive or negative) to targets (e.g. alcohol, soft-drinks). Subjects then completed a questionnaire to assess their levels of impulsivity and gave details of their drinking over the previous 30 days. The results of this study indicated that higher levels of impulsivity were linked to heavier drinking in the previous 30 days (Burton, Pederson & McCarthy, 2012). The impulsivity measure that was used also measured distinct facets of impulsivity. Scores on the urgency facet (i.e. acting rashly in accordance with a

positive or negative mood) were correlated with how many positive implicit associations the subject attached to alcohol. These results suggest that impulsivity predicts alcohol use, and that this may be explained by impulsive individuals responsiveness to implicit associations related to alcohol.

A longitudinal study (Blonigen, Timko, Finney, Moos & Moos, 2011) assessed the psychosocial outcomes of members of Alcoholics Anonymous, finding that members whose levels of impulsivity decreased during treatment had better psychosocial outcomes. The study measured impulsivity, amount of alcohol consumed and psychosocial functioning at a baseline (when the subject first engaged with AA), at 1 year, 8 years and 16 years. The study found that decreases in impulsivity correlated with less alcohol consumption and more favourable psychosocial outcomes. These outcomes include greater self-efficacy, better coping skills and greater social support.

In addition to the research highlighting the relationship between impulsivity and increased alcohol use, studies such as Blonigen et al.'s (2011) analysis of outcomes among AA members, suggest that impulsivity is not a static variable and can be modified throughout the lifetime. Other studies, such as Caspi, Roberts & Shiner's (2005) review of data from longitudinal studies on personality, have found that certain dispositional tendencies, such as impulsivity, can change over the lifetime. This may have implications for the treatment and prevention of alcohol misuse. Programmes that enhance impulse control in those dependent on alcohol and those vulnerable to developing such a dependency, could have an effect on the incidences of alcohol misuse.

A literature review of published studies could not find research investigating the relationship between impulsivity and alcohol use among an Irish sample. However, research conducted in countries other than Ireland, strongly suggest a relationship between impulsivity

and alcohol use. This suggests that researching a possible link between impulsivity and alcohol use within the Irish population could help us understand one of the roots of the misuse of alcohol within Irish society.

1.4. *Alcohol-Use & Self-Esteem*

Self-esteem refers to an individual's evaluation of their own worth. Self-esteem can affect a person's cognitive, emotional and behavioural responses to various situations (Yang, Dedovic & Zang, 2010). This can affect a person's decision making, their social interactions and has been shown to predict important life outcomes such as the likelihood of suffering from depression (Orth, Robins & Widaman, 2012). Studies suggest that individuals with high self-esteem tend to be more comfortable tolerating risk when making decisions than individuals with low self-esteem. Individuals with high self-esteem report more risky behaviours relating to alcohol use, such as more frequent binge drinking (Neumann, Leffingwell, Wagner, Mignogna & Mignogna, 2009). Conversely, research has also suggested that individuals with low self-esteem may use alcohol to compensate for their low sense of worth to boost their confidence in social situations (Glindemann, Geller & Fortney, 1999).

Research suggests different responses to the risks associated with alcohol use among those with high self-esteem and those with with low self-esteem. Neumann et al. (2009) investigated the response to messages regarding the health risks associated with excessive alcohol use, in a group of U.S. college students. Initially, students reported the amount of alcohol they consumed in the previous 30 days, and answered questions that assessed their attitudes to alcohol. Next, students read a message from the National Institute on Alcohol Abuse and Alcoholism that reported 12 possible adverse consequences related to alcohol (including messages on mortality, injury, assault and academic problems). Attitudes to

alcohol were then reassessed, and the subjects' perceptions of the scientific validity of the information on the health risks of alcohol use were measured. The subjects then completed a measure of self-esteem (Rosenberg Self-Esteem Scale). Researchers conducted a follow up after 30 days, where subjects reported their alcohol use since participating in the research and their current attitudes to alcohol.

Analyses of the data found that men with high self-esteem were more questioning of the validity of the health risk messages and were less likely to change their attitude to have their attitudes toward alcohol use. In addition, they were more likely to have engaged in heavy drinking in the 30 days prior to the study and in the 30 days after the study. However, female respondents were more likely to report a change in attitude to alcohol use after being presented with information on the health risks of excessive drinking.

Females with low self-esteem were more concerned with the health risks than females with high self-esteem, whereas females with high self-esteem were more likely to report heavy drinking in the 30 days prior to and after participating in the research. However, male students with high self-esteem engaged in heavier drinking than females with high self-esteem. Furthermore, they were less concerned with the health risks of alcohol use compared to female students with high self-esteem.

These results suggest that self-esteem may affect an individual's perception of risk. People with high self-esteem may be more likely to feel that the risks associated with a behaviour such as heavy drinking are less applicable to them. In addition, the results suggest men are more likely to disregard the risks related to alcohol and are more likely to engage in heavy drinking as a result.

Studies have also suggested a link between low self-esteem and increased alcohol consumption. Glindemann et al. (1999) measured the self-esteem of 44 U.S. college students

before a party and measured their blood alcohol levels as they exited the party. They found that individuals with low self-esteem had higher concentrations of alcohol in their blood, with an average concentration of 0.126 compared to an average concentration of 0.060 for those with higher self-esteem. This suggests that people with low self-esteem may use alcohol to boost their confidence and mediate the social anxiety that often accompanies low self-esteem (Valentiner, Skowronski, McGrath, Smith & Renner, 2011). A more recent Turkish study investigated the relationship between self-esteem and alcohol use among 17-24 year olds. This study (Kavas, 2009) found a correlation between low scores on a measure of self-esteem (Rosenberge Self-Esteem Questionnaire (1965)) and increased use of alcohol as measured by a self-report of alcohol use.

However, Luhtanen & Crocker (2005) found no correlation between measures of self-esteem and self-reports of alcohol use. The study measured alcohol use in subjects as they entered their first year at a U.S. university and included 2 follow-ups during the students' freshman year at 5 and 8 months. They found that levels of self-esteem did not predict how much alcohol the students consumed during their first year in university.

This finding suggests that the relationship between self-esteem and alcohol use is not firmly established and that further research is needed. In addition, a review of published literature could not find research that investigated the relationship between self-esteem and alcohol use among an Irish sample. This suggests that research into the relationship between self-esteem and alcohol use among the Irish population may be needed.

1.5 *Differences in alcohol-use between age groups and Gender*

Differences in drinking patterns between the genders and between young and older adults have been observed in several studies. Research suggests that men drink more heavily

than women, and that young adults drink more than older age groups (e.g. Chan, Neighbors, Gilson, Larimer, Marlatt, 2007).

Much of the research that has been discussed has found that men report drinking heavily more frequently than women (e.g. Neumann et al., 2009, Hogan, 2008, Department of Health, 2012). Balsa, Homer, French & Norton, (2011) suggest that there is social rewards for men for conforming to their male peers' drinking levels, while females are socially rewarded for drinking, but not necessarily for consuming as much as their peers and not for drinking to excess. The researchers collected data from adolescents through questionnaires and in-home interviews on drinking within their peer groups. Individuals gave information about their own drinking and of 5 males and 5 females they associate along with a sociometric rating of the popularity of these acquaintances.

Results from this study indicate that male students who drank similar levels to their peers were rated as more popular, but that there was a social penalty, in the form of being considered less popular, for drinking in excess of their peers. Female respondents who drank were rated as more popular, but there was no increase in popularity for drinking as much as their female peers. These results suggest that males and females differ in their use of alcohol, and that it may be beneficial for research related to alcohol use to compare the drinking behaviours of both groups.

Research has also noted differences in alcohol use between age groups. In a study analysing a U.S. sample, Chan, Neighbors, Gilson, Larimer, Marlatt (2007) found there is a sharp increase in the consumption of alcohol once the legal drinking age is reached. They found that this is followed by a period of reduced alcohol consumption. As reported in a previous section, Hope (2008) reported that of those presenting at accident & emergency

ward with alcohol related injuries, 70% were male aged between 18 and 29. This suggests young males are more likely to engage in excessive drinking than other populations.

In a discussion of their findings that young adults consume more than older adults and males consume more alcohol than females, Chan, Neighbors, Gilson, Larimer, Marlatt (2007) concluded by emphasising the importance of analysing gender and age differences when researching alcohol use. Hope's (2008) finding that young adult males are more likely than other groups to present at accident and emergency wards with alcohol related injuries, suggests that further research into alcohol use among different age groups and genders, within the Irish population, may be needed.

1.6 *Rationale for the Current Study*

The reports by the Deartment of Health (2012) and Health Service Executive (Hope, 2008) highlight the negative impact of excessive alcohol use in Irish society finding a link with crime (Department of Health, 2012), road traffic accidents (Department of Health, 2012) and an increased risk of cancers, gastrointestinal problems and other health problems (Department of Health, 2012). Although the effects of alcohol misuse have been outlined, the Department of Health (2012) and HSE (Hope, 2008) highlighted a need for further research into the causes of excessive drinking among the Irish population. The current study aims to contribute to our understanding of alcohol use in Ireland, by investigating if self-esteem and impulsivity predict levels of alcohol consumption.

A review of published literature supported the suggestion that levels of impulsivity and self-esteem are related to alcohol use. Research has consistenly found that levels of impulsivity are positively correlated with increased alcohol use (e.g. Burton, Pedersen & McCarthy, 2012; Lawrence, Luty, Bogdan, Shakian & Clark, 2009). Blonigen, Timko, Finney, Moos & Moos (2011) have also suggested that lower levels of impulsivity were

correlated with better outcomes in alcohol rehabilitation. Impulsivity has been linked to problems of inhibiting impulses (Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001), which may lead individuals to have difficulty suppressing desires to drink alcohol (Burton, Pedersen & McCarthy, 2012). A literature review could not find research that investigated the relationship between impulsivity and alcohol use among an Irish population. The current study aims to provide research that investigates the relationship between these two variables among an Irish sample.

The literature reviewed also suggested a relationship between alcohol consumption and high and low levels of self-esteem (e.g. Neumann, Leffingwell, Wagner, Mignogna & Mignogna, 2009; Kavas 2009). High self-esteem has been linked with engaging in risky behaviours which may include excessive drinking. Neumann, Leffingwell, Wagner, Mignogna & Mignogna (2009) found that individuals with high self-esteem report binge drinking more frequently than those with lower levels of self-esteem. However, research has also linked increased alcohol use to low self-esteem. Glindemann, Geller & Fortney (1999) found that individuals with low self-esteem often use alcohol to boost their confidence in social situations.

In addition, Luthanen & Crocker (2005) found no correlation between levels of self-esteem and self-reports of alcohol use. The variation in findings from research on alcohol use and self-esteem suggest further research is needed to establish the nature of the relationship. For this reason, the current study will investigate if high and low levels of self-esteem are related to increased alcohol consumption. In addition, a literature review could not find research that investigated a link between self-esteem and alcohol use among a sample of Irish residents. This study will provide research that investigates the relationship between self-esteem and alcohol use within an Irish sample.

Previous research also suggested that there are differences in alcohol consumption between genders and young and older adults. Chan, Neighbors, Gilson, Larimer, Marlatt (2007) found that males tend to drink more than females and young adults drink more than older adults. This research concluded by emphasising the need to research difference within a sample when researching alcohol consumption. Hope (2008), also reports that within Ireland, 70% of those presenting at accident and emergency are males, aged between 18 and 29. This suggests that researching gender and age differences, with respect to alcohol consumption, within an Irish population is needed.

The current study aims to investigate if self-esteem and impulsivity are related to alcohol use within the Irish population. Alcohol use will be treated as a dependent variable, with self-esteem and impulsivity treated as independent variables. The effects higher levels of impulsivity has on drinking will be analysed. The effect high and low levels of self-esteem have on drinking will also be analysed. Differences between young and older adults, and genders will also be investigated.

It is hoped that by investigating the relationship between self-esteem, impulsivity and alcohol use within the Irish population, this research may lead to a deeper understanding of the factors that contribute to excessive alcohol use within Irish society.

1.7 *Hypotheses*

This study will investigate if there is a relationship between alcohol consumption and the personality factors self-esteem and impulsivity. In addition, gender differences and differences between young adults and older adults, with regard to these variables will be investigated.

The following hypotheses will be tested. In addition, differences between genders and age groups will be analysed for hypotheses 1-4.

Hypothesis 1: There will be a statistically significant relationship between alcohol consumption and impulsivity.

Hypothesis 2: There will be a statistically significant relationship between self-esteem and alcohol use.

Hypothesis 3: There will be a statistically significant difference in the level of alcohol consumed by those with low self-esteem and those with normal levels of self-esteem.

Hypothesis 4: There will be a statistically significant difference in the level of alcohol consumed by those with high self-esteem and those with normal levels of self-esteem.

Hypothesis 5: Young adult males will drink significantly more compared to the rest of the sample.

Hypothesis 6: Among young adults with high self-esteem, males will consume more alcohol than females.

Hypothesis 7: Among young adult males with high impulsivity, those with high self-esteem will drink significantly more than those with low self-esteem.

Section 2- Methodology

2.1 *Selection of Participants*

Participants were obtained through an opportunity sample, with respondents being approached to participate due to their availability. Using an online survey, adults who were resident in Ireland were contacted and asked to participate. Respondents included contacts of the researcher who were approached by email and psychology students at Dublin Business School, who were contacted via a social networking website. All data was collected anonymously and no reward was offered for completing the survey. This provided a sample of 126 participants, including 90 males and 36 females. This provided a representative sample of Irish adults with ages ranging between 19 and 75.

2.2 *Research Design*

A mixed design including correlational and cross-sectional aspects was developed for the current study. This would investigate the relationships between alcohol use and: higher levels of impulsivity, low levels of self-esteem and high levels of self-esteem were investigated. In addition, differences between genders and age groups would be analysed in a cross-sectional analysis.

A measure of alcohol use was classed as a dependent variable, with measures of self-esteem and impulsivity classed as independent variables. An analysis of different levels of impulsivity and self-esteem was to be conducted, to investigate the effect different levels of these variables have on alcohol use. These relationships were to be investigated using regression analyses. If data was skewed and a regression analysis could not be run, these relationships would be investigated by running Spearman's Rho correlation tests.

A cross-sectional analysis would be conducted to investigate differences between age groups and genders, in the relationships between the dependent variable and independent variables. Four grouping variables were identified for cross-sectional analyses. These were males under 30, females under 30, males over 30 and females over 30. Where the hypothesis did not directly compare 2 or more of these subgroups, differences between gender and age groups were to be investigated. Differences in the relationships between self-esteem, impulsivity and alcohol use, for these groups, were to be reported where relevant.

2.3 *Materials*

Data was collected using three standardised questionnaires. In addition, respondents were asked to indicate their gender and age. These questionnaires were distributed as an online survey, that included a cover and debriefing note.

2.3.1 *Dependent Variable- Alcohol use*

Alcohol use was measured using the alcohol use disorders identification test (AUDIT). This is a ten item scale developed by the World Health Organisation (Babor, Higgins-Biddle, Saunders & Monteiro, 2001), to identify harmful or hazardous alcohol use. It includes questions relating to alcohol consumption (e.g. How often do you have six or more drinks on one occasion? How often do you have a drink containing alcohol?) and the impact of alcohol on the respondent's life (e.g. How often during the last year have you had a feeling of guilt or remorse after drinking?, How often during the last year have you failed to do what was normally expected from you because of drinking?). The scale has been validated in six countries and recommended for international use by the World Health Organisation. The scale was initially developed to allow health care workers identify harmful drinking patterns in patients, but has been also been shown to be reliable among the wider population (Babor, Higgins-Biddle, Saunders & Monteiro, 2001).

For questions 1-8, the respondent chooses an answer from 5 possible options. Each option has a score that ranges between 0 and 4. Lower scores indicate behaviour that does not suggest hazardous alcohol use, and higher scores indicate behaviours that suggest hazardous alcohol use. For questions 9 and 10 the respondent chooses from 3 options, which have scores of 0,2 and 4. Scores from the 10 questions are summed to provide a measure of the respondent's drinking behaviours.

Scores on this measure range between 0 and 40. Scores can be grouped into 4 different categories (Babor, Higgins-Biddle, Saunders & Monteiro, 2001). Scores between 0 and 7 indicate drinking that is not harmful, with a score of 0 suggesting someone who does not drink alcohol. Scores between 8 and 15 suggest hazardous drinking patterns. People in this category may benefit from simple advice on the reduction of alcohol consumption. Scores between 16 and 19 suggest more serious hazardous drinking. Individuals who score is in this category may benefit from a counselling intervention to curb their excessive drinking. Scores of over 20 suggest alcohol dependence. Individuals whose scores are in this category may warrant further clinical evaluation for alcohol dependence (Babor, Higgins-Biddle, Saunders & Monteiro, 2001).

2.3.2.1. *Independent Variable 1- Impulsivity*

Impulsivity was measured using the Barratt Impulsiveness Scale, Version 11 (Patton, Stanford & Barratt, 1995). This is among the most commonly used instruments for evaluating impulsiveness (Stanford, Mathias, Dougherty, Lake, Anderson & Patton, 2009). The scale presents respondents with 30 items describing common impulsive or non-impulsive behaviours or attitudes.

Respondents indicate how often or rarely they behave or feel this way, according to a likert scale that ranges between rarely/never to almost always/always. For items describing

impulsive behaviours and attitudes items are scored; 1=Rarely/Never, 2=occasionally, 3=Often, 4=Almost always/always. For items descriing non-impulsive attitudes and behaviours this scoring is reversed. These scores are summed to give a measure of the respondent's impulsivity. Scores range between 30 and 120. Higher scores on this scale indicate higher levels of impulsivity.

In addition to a measurement of overall impulsiveness, the scale measures different aspects of impulsivity. This includes three second order factors; attentional, motor and non-planning expand on these. However, the validity of these secondary factors has been questioned (Steinberg, Sharp, Stanford & Tharp, 2012). To ensure the validity of results of the current study, only the overall scores for this scale were used for analyses.

2.3.2.2. *Independent Variable 2- Self-Esteem*

Self-esteem was measured using the Rosenberg Self-Esteem scale (1965). This is a widely used ten-item scale for measuring self-esteem. The scale includes questions relating to positive and negative aspects of self-worth. All questions are answered using a four option likert scale that ranges from strongly agree to strongly disagree. For positive statements responses are scored; 0=strongly disagree, 1=disagree, 2=agree, 3=strongly agree. For negative statements this scoring is reversed. The scores for the ten questions are summed to give a measure of the respondent's level of self-esteem. Scores can range from 0 to 30, with higher scores indicating higher levels of self-esteem.

The scale was initially developed and validated among a group of adolescents (Rosenberg, 1965). However, it has been shown to be valid among the wider population, and has been used internationally used it was first introduced (e.g. Schmitt & Allik, 2005).

2.3.3. *Procedure*

Questionnaires were distributed using the google docs web resource. This allows users to create an electronic survey, which can be distributed on the internet. The survey included the three questionnaires mentioned in the previous section, as well as a cover and debriefing sheet.

The cover sheet for the survey gave information about the study and addressed ethical issues relevant to the research. This informed respondents that the research investigated the relationship between alcohol use and personality characteristics, and was being conducted by a psychology student at Dublin Business School. Respondents were informed that some questions in the survey related to alcohol misuse and that they could withdraw from the survey at any point. The cover sheet stated clearly that the data was collected anonymously and that by completing in the survey they indicate that they consent to participate. The debriefing sheet gave respondents contact details of the researcher and contact information of organisations that can offer services to deal with alcohol problems.

The survey was first distributed by email to contacts of the researcher during February 2013. The survey was also posted on a social media group for students completing a Higher Diploma in Arts in Psychology at Dublin Business School, in March 2013.

Section 3- Results

3.1 Descriptive Statistics

3.1.1 Demographic Information

Data was collected from 126 respondents. This sample consisted of 90 male respondents and 36 female respondents, whose ages ranged between 19 and 75. The mean age of the sample was 33.94. The sample had a mode of 27, a median of 28 and a standard deviation of 11.69 years. 2 male respondents did not indicate their age. Among male respondents, the ages of respondents ranged varied 19 and 75, with a mean age of 33.81, and a standard deviation of 11.353 years. Among female respondents, ages of respondents ranged between 24 and 62, with a mean age of 34.28, and a standard deviation of 12.637 years.

The distribution of ages within the sample is summarised in table 1. Over half of respondents were adults under 30, with 53 male and 22 female respondents in this group. 49 respondents were older than 30, with 35 male respondents and 14 female respondents. This facilitated a comparison of drinking behaviours, self-esteem and impulsivity between respondents who were under 30 years old and respondents who were over 30 years old.

Table 1 *Ages of Respondents*

Age	Total	Male	Female
18-30	75	53	22
31-40	23	16	7
41-50	11	11	0
51-60	9	4	5
61-70	5	3	2
71-80	1	1	0

3.1.2 Alcohol Use

Scores on the Alcohol Use Disorders Identification Kit ranged between 0 and 26, with a mean score of 10.16. Among the respondents' scores, there was a median value of 9, a mode of 6, and a standard deviation of 6.11. The AUDIT showed good internal consistency, (α=0.82). The distribution of scores across the sample is represented in figure 1.

60.83% of respondents had an AUDIT score of 8 or more, which classes their drinking as hazardous. Although the most common score was 6, the most common category for scores to fall under was 8-15 (42.5% of the sample), which indicates moderate levels of hazardous drinking. 10 % of the sample had serious levels of hazardous drinking, which may indicate serious harm to self and others (Babor, Higgins-Biddle, Saunders & Monteiro, 2001). In addition, 8.33% of the sample had a score that was higher than 20, which may indicate alcohol dependence (Babor, Higgins-Biddle, Saunders & Monteiro, 2001).

Figure 1 Distribution of Scores on the Alcohol Use Disorders Identification Kit
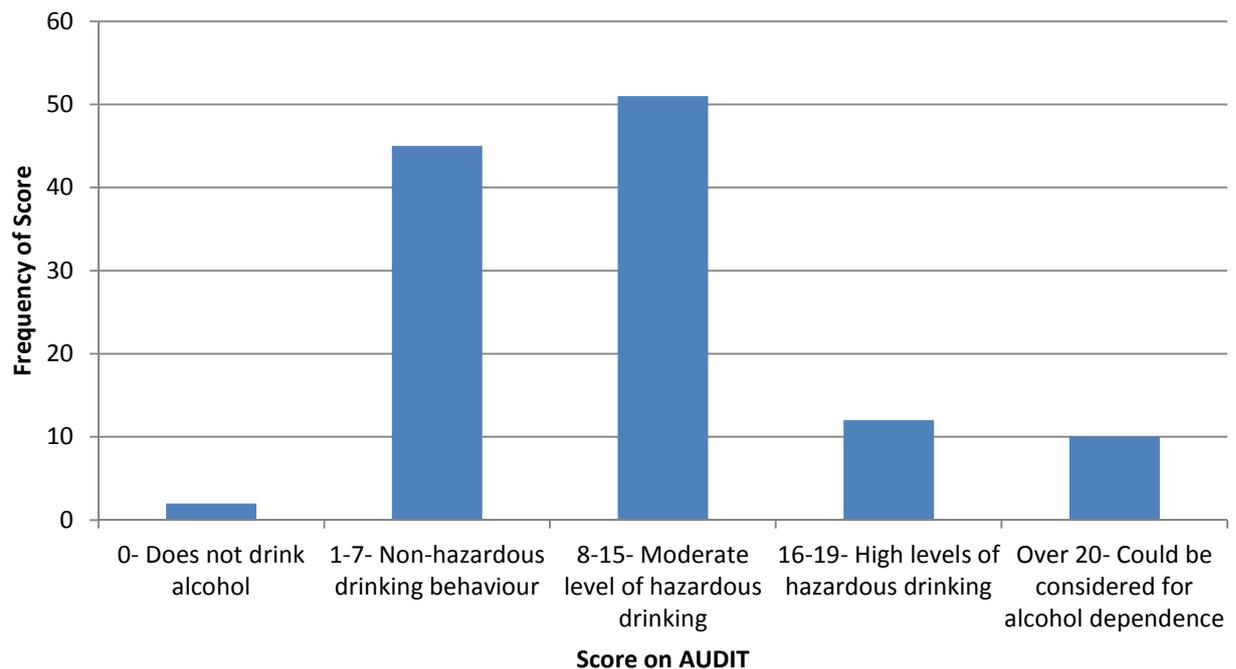
The results suggested that men are more likely to have hazardous drinking behaviours than women. Males (mean=10.82, SD=6.45) tended to have higher scores than females (mean=8.45, SD=4.77) on the AUDIT questionnaire. An independent samples t-test found that there was a statistically significant difference between AUDIT scores for males and females (t (77.75)=2.18, p=0.03). The 95% confidence limits show that the population mean difference of the variables lies somewhere between 0.21 and 4.52.

The results also suggest that young adults are more likely than older adults to display hazardous drinking behaviour. Adults under 30 (mean=12.23, SD=6.04) tended to have higher on the AUDIT questionnaire than adults over 30 (mean=6.96, SD=4.23). The 95% confidence limits show that the population mean difference of the variables lies somewhere between 3.40 and 7.14. An independent samples t-test found that there was statistically

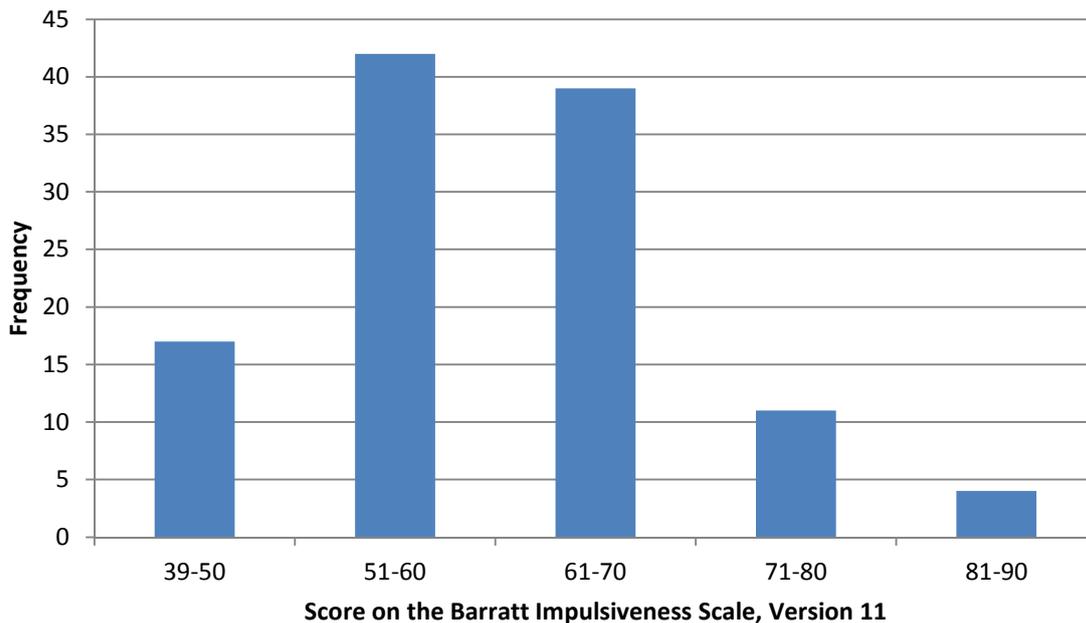significant difference between AUDIT scores for those Under 30 and those over 30 (t(115.93)=5.57, p=0.001).

Although males were found to drink significantly more in comparison including the entire sample, among young adults not significant difference was found between AUDIT scores for males (mean=12.71, SD=6.48) and females (mean=10.95, SD=4.57). An independent samples t-test did not find a significant difference between young adult males and young adult females (t(45.756)=1.27, p=0.21). The 95% confidence limits show that the population mean difference of the variables lies somewhere between -1.04 and 4.55.

3.1.3 Impulsivity

Scores on the Barratt Impusiveness Scale, Version 11 ranged between 39 and 90, with a mean score 60.66. Among the respondents' scores there was a median value of 60, a mode of 56, and a standard deviation of 9.87. The BIS-11 showed good internal consistency (α =0.82). The distribution of scores across the sample is represented figure 2.

Scores most commonly fell between 51 and 60 (37.2% of the sample) or 61 to 70 (34.5% of the sample). In addition, 15% of the sample had a score between below 50, while 13.2% had score over 70.

Figure 2 Distribution of Scores on the Barratt Impulsiveness Scale, Version 11

An analysis of the data suggests there is no significant difference between males (mean=61.22, SD=9.21) and females (mean=59.25, SD=11.41), in their levels of impulsivity. The 95% confidence limits show that the population mean difference for these variables lies between 2.11 and 6.06. An independent samples t-test found there was no statistically significant difference between scores on the Barratt Impulsiveness Scale of males and females (t(111)=0.96, p=0.34).

However, an analysis of the collected data found a notable difference in impulsivitiy between young adults and older adults. Adults under 30 (mean=62.59, SD=10.72) had higher scores on the Barratt Impulsiveness scale than adults over 30 (mean=58.50, SD=7.80). The 95% confidence limits show that the population mean difference for these variables lies between 0.73 and 8.06. An independent samples t-test found that there was a statistically significant difference in the scores of adults under 30 and adults over 30 (t(110)=2.38, p=0.02).

3.1.4 Self-Esteem

Scores on the Rosenberg self-esteem scale ranged between 0 and 30, with a mean score of 20. Among the respondent's scores there was a median value of 20, a mode of 20 and a standard deviation of 6.65. The distribution of scores across the sample is represented in figure 3.

The Rosenberg Self-Esteem Scale showed strong internal consistency (α= 0.93). However, cornbach's alpha scores over 0.9 suggest some redundancy may exist among the scale's questions. A Kolmogorov-Smirnov test (df(120)=.004) suggested that self-esteem scores for this sample were not normally distributed. This distribution of scores was negatively skewed (skewness=-0.99, kurtosis=1.05). The lowest possible value on the Rosenberg SES is 0 and the highest possible value is 30, with 75.9% of scores falling between 15 and 30. Over half of respondent's scores were between 16-20 (27.5% of sample) or 21-25 (29.2% of the sample). 19.2% of respondents had a score above 25, with 2 respondents having the maximum possible score of 30. 24.1 % of scores were between 0 and 15. 15.8% of respondents had a score between 11-15. 8.8 % of respondents had a score below 11, with 4 respondents having a minimum possible score of 0.

Figure 3 Distribution of Scores on the Rosenberg Self-Esteem Scale
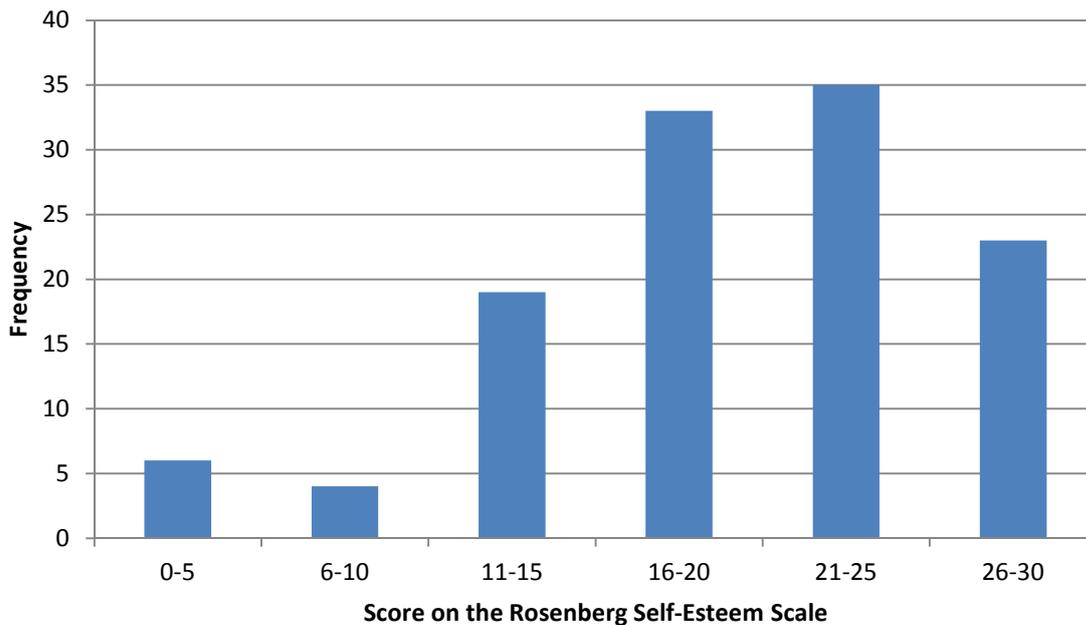
An analysis of the data did not suggest a significant difference between males and females levels of self-esteem. A Mann-Whitney U test was used to test the hypothesis that there would be a statistically significant difference between males' and females' levels of self-esteem as measured by the Rosenberg self-esteem scale. Among male respondents the mean rank was 61.1, and among female respondents the mean rank was 58.97. A Mann-Whitney U test revealed that the scores of males and females did not differ significantly ($z=-0.30$, $p= 0.76$).

In addition, a statistical analysis did not highlight a significant difference in self-esteem scores among young adults and older adults. A Mann-Whitney U test was used to investigate the difference between adults under 30 and adults over 30. Adults under 30 had a mean rank of 57.53, and adults over 30 had a mean rank of 62.48($Z=0.771$, $p=0.44$). A Mann-Whitney U test did not find a statistically significant difference among these two groups.

3.2 *Inferential Results*

3.2.1 *Hypothesis 1: There will be a statistically significant relationship between hazardous drinking and impulsivity*

A linear regression was used to investigate the relationship between alcohol consumption and impulsivity. This investigated the effect a change in levels of impulsivity, as measured by the BIS-11, had on hazardous drinking behaviour, as measured by the AUDIT inventory. The results indicate that a significant proportion of the total variation of AUDIT scores was predicted by BIS-11 scores ($F (1, 107)= 23.20$, $p=0.001$, $R^2 = 0.18$) (BIS_total, beta= 0.42, p=0.001). This suggests a moderate relationship between these variables. For an increase of 1 on BIS-11 scores, there was an increase in AUDIT scores of 0.27. Confidence limits were narrow, showing 95% confident that the population slope is between 0.16 and 0.38. However, further analysis indicates that there is differences in the relationship between alcohol consumption and impulsivity between male and female adults over 30.

Among young adults, linear regressions suggest there is a statistically significant relationship between BIS-11 scores for both males and females. For males, confidence levels show 95% confidence that the population slope is between 0.08 and 0.47 ($F (1, 44)=8.06$, $R^2 =0.16$, $p=0.007$) (BIS_total, beta= 0.39, p=0.007). For females, confidence levels indicate 95% confidence that the population slope is between 0.24 and 0.42 ($F(1,15)=5.65$, $R^2 =0.28$, $p=0.03$) (BIS_total, beta= 0.53, p=0.03).

Among adults over 30, linear regressions indicated a statistically significant relationship between scores on the BIS-11 and AUDIT inventory for males, but not for females. Among males, confidence levels show 95% confidence that the population slope is between 0.005 and 0.47 ($F(1, 30)=4.34$, $R^2 =0.13$, $p=0.046$) (BIS_total, beta= 0.36, p=0.046).

Among females, confidence levels show 95% confidence that the population slope is between -0.22 and 0.11 (F(1,11)= 0.55, R^2 =0.048, p=0.47) (BIS_total, beta= 0.22, p=0.47).

3.2.2 *Hypothesis 2: There will be a statistically significant relationship between self-esteem and alcohol use.*

A 2-tailed Spearman's rho test for correlation found there was no statistically significant relationship between self-esteem, as measured by the Rosenberg SES, and AUDIT scores (rs(114)= -0.02, p=0.84). A Spearman's Rho test was used to investigate a possible correlation, in order to accommodate the negatively skewed distribution of scores self-esteem scores. The test was two-tailed to test the hypothesis that high and low self-esteem are related to alcohol use.

This finding that there was no statistically significant relationship between self-esteem and alcohol use was consistent across genders. Among males, a 2-tailed Spearman's rho test for correlation found no significant relationship between Rosenberg SES scores and AUDIT inventory scores (rs(83)=-0.04, p=0.76). Among females, a 2-tailed Spearman's rho test for correlation found no significant relationship between Rosenberg SES scores and AUDIT inventory scores (rs (33)=0.09, p=0.65).

The finding was also consistent among young adults and older adults. Among adults under 30, a 2-tailed Spearman's rho test for correlation found no significant relationship between Rosenberg SES scores and AUDIT inventory scores (rs(66)= 0.063, p=0.62). Among adults over 30, a 2-tailed Spearman's rho test for correlation found no significant relationship between Rosenberg SES scores and AUDIT inventory scores (rs(46)= -0.03, p=0.83).

3.2.3 *Hypothesis 3: There will be a statistically significant difference in the level of alcohol consumed by those with low self-esteem and those with normal levels of self-esteem.*

An independent samples t-test was used to investigate differences in alcohol consumption between those with low self-esteem and those with normal levels of self-esteem. Before running this test, respondent's scores were split into 3 groups; low, normal and high self-esteem. The Rosenberg self-esteem Scale (1965) does not have discrete cut-off points to indicate if scores are low, medium or high. However, other researchers (e.g. Strange, Neuenschwander & Dauer, 2005) have proposed that scores between 15-25 are normal, with scores below this range deemed to be low, and scores above it deemed to be high. It was felt that this was an appropriate interpretation of scores for the current sample, as 64.2% of respondents' scores fell between 15-25. 16.7% of scores fell below this range and were deemed to suggest low self-esteem. 19.2% of scores were above this range, and were deemed to suggest high self-esteem. In addition, this recoding of scale measurements of Rosenberg self-esteem scores to ordinal scores, meant the distribution of scores was normally distributed, which would facilitate the use of parametric tests in analysis.

A statistical analysis of alcohol use between those with low self-esteem (mean=9.89, SD=4.85) and those with normal levels of self-esteem (mean=9.92, SD=6.32), found no significant difference between these groups. The 95% confidence limits show that the population mean difference of the variance lies between -3.2 and 3.14. An independent samples t-test found no statistically significant difference in alcohol use among those groups with low and normal self-esteem ($t(90)=-0.19$, $p= 0.99$).

3.2.4 *Hypothesis 4: There will be a statistically significant difference in the level of alcohol consumed by those with high self-esteem and those with normal levels of self-esteem.*

A statistical analysis did not find a significant difference in alcohol consumption among those with high self-esteem (mean=11.18, SD=7.05) and those with normal levels self-esteem (mean=9.92, SD=6.32). The 95% confidence limits show that the population mean difference of the variance lies between -4.39 and 1.87. An independent samples t-test found no statistically significant difference in alcohol consumption between those with high and normal self-esteem (t(94)=-0.80, p=0.43).

3.2.5 *Hypothesis 5: Young adult males drink significantly more compared to the rest of the sample*

Young adult males (mean = 12.71, SD = 6.48) drink significantly more when compared with the rest of the sample (mean = 8.09, SD = 4.66). The 95% confidence limits shows that the population mean difference of the variables lies somewhere between 2.49 and 6.75. An independent samples t-test found that there was a statistically significant difference between the alcohol use of young adult males and the rest of the sample (t(86.94) = 4.31, p = .001).

However, no significant difference was found in alcohol use between young adult males and young adult males (mean = 12.71, SD = 6.48) and young adult females (mean=10.95, SD=4.58). An independent samples t-test found that there was no statistically significant difference between the alcohol use of young adult males and young adult females (t(68) = 1.08, p = .28).

3.2.5 *Hypothesis 6: Among young adults with high self-esteem, males will consume more alcohol than females.*

Among young adults with high self-esteem, there was no significant difference in alcohol use between males (mean=15.4, SD=7.40) and females (mean=10.33, SD=6.66). The

95% confidence limits shows that the population mean difference of the variables lies somewhere between -5.46 and 15.96. An independent samples t-test found that there was no statistically significant difference in alcohol consumption between these two groups (t(11) = 1.059, p = .776).

3.2.6 *Hypothesis 7: Among young adult males with high impulsivity, those with high self-esteem will drink significantly more than those with lower self-esteem.*

This hypothesis was tested using an independent samples t-test. Before the test was conducted, scores on the BIS-11 were split between into those who had a high score on the questionnaire and those who had a lower score. This was done in order to isolate the scores of individuals with high impulsivity for further analysis. The BIS-11 does not have discrete cutoff points to indicate if a score is high or low. However, previous research had suggested a score of 64 was an appropriate cutoff point, with high scores considered to be any score above this cutoff (Doran, Spring, McChargue, Pergadia & Richmond, 2004). However, among the current sample 34.5% of scores were between 61 and 70. For this reason a higher cutoff point of a score of 70 was used to identify high impulsivity. 85% of scores were below this score, with 15% of scores above this score.

Among young male adults with high impulsivity, no significant difference was found in levels of alcohol use among those with high self-esteem (mean=15.43, SD=6.503) and lower levels of self-esteem (mean=21.33, SD=4.16). The 95% confidence limits show that the population mean difference lies between -15.46 and 3.65. An independent samples t-test found that there was no statistically significant difference in alcohol use among young males with high self-esteem and lower levels of self-esteem (t(8)=-1.43, p=0.19).

Section 4: Discussion of Results

Reports from the Health Service Executive (Hope, 2008) and Department of Health (2012) highlighted a need for further research into contributory factors to the excessive and harmful use of alcohol in Irish society. The current study aimed to contribute psychological research that investigated if there was a relationship between self-esteem, impulsivity and excessive alcohol use among the Irish population. Findings suggest that impulsivity may be a valid predictor of hazardous alcohol use among a number of groups in the Irish population. However, findings relating to self-esteem suggest it is not a valid predictor of alcohol use among this population.

4.1 *Summary of Findings*

An analysis of data collected from 126 Irish adults suggested a relationship between impulsivity and hazardous alcohol use among this sample. However, among females aged over 30, no relationship between impulsivity and alcohol use was found.

An analysis of the data also confirmed that young adults drink significantly more than older adults. Although gender differences in alcohol use were observed when comparing the entire population, no significant difference was found in AUDIT scores among young adult males and young adult females.

In addition, no relationship between self-esteem and alcohol use was found. Furthermore, among young adults with high impulsivity, those with high self-esteem did not drink more than those with low self-esteem.

4.1.2. *Impulsivity and Alcohol-Use among the Irish Population*

The hypothesis that there would be a statistically significant relationship between alcohol consumption and impulsivity was accepted. A regression analysis suggested that higher levels of impulsivity predict higher ratings of hazardous alcohol use. This regression

revealed the relationship to be significant (p=0.001) with a moderate correlation between these variables (beta=0.42). This reflects previous research findings from studies conducted in countries other than Ireland (e.g. Lawrence et al., 2009, Burton, Pederson & McCarthy, 2012). The findings of the current research support the idea that people who have difficulty controlling impulses are more likely to engage in hazardous alcohol use.

However, further analysis suggested no significant relationship existed between these two variables among women over 30 years old. This finding was not encountered in a review of previous literature on the relationship between alcohol use and impulsivity.

4.1.3. *Self-esteem and Alcohol-Use among the Irish Population*

Hypotheses related to self-esteem and alcohol use were rejected. A 2-tailed spearman's rho correlation did not find any relationship between these variables (p=0.84). In addition, a comparison of AUDIT scores among those with normal self-esteem and those with high and low self-esteem, did not suggest any significant relationship between these variables. Previous research into the relationship between self-esteem and alcohol use had produced mixed results. Findings had suggested a relationship between alcohol use and low self-esteem (Glindemann, Geller & Fortney, 1999, Kavas, 2009) and high self-esteem(e.g. Neumann et al., 2009). In addition, Luhtanen & Crocker (2005) conducted research that found no relationship between these two variables. The current study's findings support the latter finding, with no significant relationship between self-esteem and alcohol use being established.

A cross-sectional analysis comparing gender differences in drinking behaviours between young adults with high self-esteem, did not find any statistically significant result (p=0.31). This finding contrasts from previous research on a sample of U.S. students (Neumann et al., 2009). This research found that young males with high self-esteem tend to

discount risks more frequently than females with high self-esteem, leading them to engage in hazardous alcohol use more frequently. This finding was not replicated among the current study's sample.

The current study's results suggest that among young males with high impulsivity, having high self-esteem does not relate to more hazardous drinking. Although previous research had found that highly confident young males were significantly more hazardous in their drinking behaviours than other young adults (Neumann et al., 2009), the current study did not add further support to the findings of this research.

4.1.4. *Gender and Age differences in Alcohol Consumption*

The current research replicated previous findings from research conducted in other countries (e.g. Chan, Neighbors, Gilson, Larimer, Marlatt, 2007), finding that males drink significantly more than females and young adults drink significantly more than older adults. However, among young adults, no significant gender differences in drinking behaviours were noted. Furthermore, mean scores for young adult males and young adult females on the AUDIT inventory, were above the level that indicate hazardous drinking (a score of 8). For males this was 12.71 and for females this was 10.95. Among adults over 30, these scores were 7.74 for males and 5.07 for females. This suggests hazardous drinking is extremely common among young adults.

4.2. *Strengths & Weaknesses of the Current Study*

The current study contributes to our understanding of alcohol use in Irish society. Its findings that suggest: a link between impulsivity and hazardous alcohol use, hazardous drinking is common among young adults of both genders, and that self-esteem does not relate

to hazardous alcohol use. These findings help deepen our understanding of alcohol use within the Irish population.

The data used for analysis was collected from a sample that ranged in age from 19 to 75. 60.5% of the sample were aged under 30, with 39.5 % aged over 30. This suggests that the comparisons between young adults and older adults are valid. However, this sample did not contain enough variation in age demographics to allow for valid comparisons of older age groups. For example, only 5 respondents were aged between 60 and 70, and only 1 respondent was older than 70. A study that analysed a sample that allowed for valid comparisons of alcohol use among a broader range of age demographics may provide more detailed research on alcohol use within the Irish population.

The current study also provided an analysis of differences in alcohol use between genders and age groups with respect to self-esteem and impulsivity. As well as finding that there is a significant difference in alcohol use between younger and older adults, the findings of a regression analysis that impulsivity does not predict alcohol use among females over 30 ($p=0.47$), suggests that that the analysis of the differences in gender and age groups was a strength of this study. This finding was not encountered in a literature review of studies on the relationship between alcohol use and impulsivity, and may require further research to verify or contradict this finding.

However, the sample consisted of 71.4% male respondents and 28.6% female respondents. A sample that had a more balanced split between the genders may provide more reliable comparisons of drinking between men and women. In addition, a study that looked at other personal differences among its sample, such as socioeconomic status and general health, may provide a more nuanced overview of excessive alcohol use among the Irish population.

The measure of impulsivity used in this study is the most widely used measure of impulsivity in clinical and non-clinical settings (Stanford et al., 2009), and has been repeatedly validated as reliable predictor of this trait (Stanford et al., 2009). This suggests the findings related to impulsivity are based on a valid measure. In addition, the BIS-11 contains a number of subscales that measure second and first order factors that consist of characteristics of impulsivity. For example, second order factors aspects of impulsivity that relate to attentional, motor and nonplanning problems (Patton, Stanford & Barratt, 1995). The BIS-11 includes questions that measure these aspects of impulsivity. Although the current study rejected the use of these subscales due to questioning of the validity of this factor structure (Steinberg, Sharp, Stanford & Tharp, 2012), research that includes these in their analysis may give a more detailed overview of the relationship between impulsivity and alcohol use.

4.3. *Ideas for Further Research*

The findings and weaknesses of the current study may provide a basis for further research investigating alcohol and drug use among an Irish population. Several of the weaknesses of the study could be corrected for in future studies investigating self-esteem, impulsivity and alcohol use, while the topic of research could be broadened to include research into drug addiction and other psychological factors.

The finding that impulsivity and hazardous alcohol use are not correlated among women over 30 may warrant further investigation. This may be explained by a gender bias in the sample population but may be reflective of the Irish population at large. It is possible that many women in this demographic are mothers which may deter them from hazardous drinking. Research that investigates their family status among a sample with an even gender balance may be beneficial.

Research that uses subscales of the BIS-11 in their analysis may help to further explain the relationship between impulsivity and alcohol use. In addition, including information on demographic differences such as socioeconomic status, general health, marital status etc. may provide a more detailed analysis of alcohol use in Ireland.

Research that investigates psychological traits other than self-esteem and impulsivity, and their relationship to alcohol use in the Irish population may be needed. Studies that measure other psychological traits as independent variables, and investigate the relationship with a dependent variable of a measure of alcohol use, may help deepen our understanding of alcohol use in Ireland.

Furthermore, research that analyses the relationship between drug use and impulsivity in an Irish sample may be derived from this research. A relationship between drug use and impulsivity, as measured by the BIS-11 has also been suggested in previous research (e.g. Dougherty, Mathias, Marsh, Moeller & Swann, 2004). Research that investigates these variables among an Irish sample may help explain harmful drug use among the Irish population.

The finding that there was no significant difference in alcohol use among young adult males and young adult females may warrant further research. Hope (2008) reported that of those presenting at accident and emergency wards with alcohol related injuries, 70% were males aged between 18 and 29. If there is no significant difference hazardous drinking among young adult males and females, this phenomenon may be explained by differences in reactions to alcohol. Males may be more likely to engage in risky behaviour when excessive amounts of alcohol are consumed (Giancola & Zeichner, 1995). Further research may be needed to establish if this explains Hope's (2008) report that 70% accident and emergency presentations relating to alcohol related injuries are from young adult males.

4.4. *Applications of the Current Study's Findings*

The findings of the current study may have practical implications for public initiatives to curb hazardous alcohol use and may contribute to the development of more effective rehabilitation for those dependent on alcohol.

The finding that alcohol use is related to impulsivity could help direct initiatives that attempt to reduce excessive drinking. These may include creating public advertisements that encourage people to develop greater self-control over their drinking. Existing public initiatives that encourage people to resist urges for activities such as drink-driving have been shown to be effective at reducing its incidence (Department of Health, 2012). The Department of Health (2012), has also suggested that social networking campaigns should be used to address excessive drinking in the Irish population. The findings of the current study could be used to inform the content of such a campaign.

The findings related to impulsivity and alcohol use may also have implications for treating alcohol dependence. Rehabilitation programmes that emphasise controlling impulsivity may have better outcomes than programmes that neglect this. Previous research found that individuals with lower levels of impulsivity have better outcomes from alcoholics anonymous (Blonigen, Timko, Finney, Moos & Moos, 2011). The current study's findings contribute further support to a link between lower impulsivity and reduced alcohol use. In a longitudinal study of personality, Caspi, Roberts & Shiner's (2005) found that certain traits such as impulsivity can be modified over the lifetime. This suggested malleability of impulsivity may mean initiatives that attempt to reduce levels of impulsivity could be successful at reducing hazardous alcohol use.

Furthermore, the finding that self-esteem may be unrelated to alcohol use may also have implications for treating alcohol dependence. Many rehabilitation programmes

emphasise developing self-esteem to help overcome alcohol problems (e.g. "Alcohol and Low Self-Esteem," 2013). However, the current study's findings suggest that alcohol use and self-esteem are unrelated. This suggests that developing self-esteem in those dependent on alcohol may not be an effective form of rehabilitation.

Conclusion

The current study investigated the relationship between alcohol use, impulsivity and self-esteem, among the Irish population. Findings of regression analyses suggest that higher levels of impulsivity are predictive of alcohol use among young adults, and older male adults. However, this relationship was not demonstrated in an analysis of impulsivity and alcohol use among females over 30 years old.

A relationship between self-esteem and alcohol use was not demonstrated among the study's sample. This suggests self-esteem levels are not predictive of alcohol use among the Irish population.

The study also found that hazardous alcohol use among young adults did not differ with regard to gender. Further research may be needed to explain phenomena such as 70% of accident and emergency presentations related to alcohol related injuries are from young adult males (Hope, 2008). Further research may also be needed to establish why no relationship between impulsivity and alcohol use was recorded among females aged over 30.

It is hoped that these findings contribute to our understanding of alcohol use among the Irish population, and that they may inform more effective public initiatives to reduce excessive alcohol use and assist in the development of more effective interventions for those dependent on alcohol.

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Appendices

Appendix 1: Rosenberg self-esteem Scale (Rosenberg, 1989)

Below is a list of statements dealing with your general feelings about yourself.

If you **strongly agree** with the statement   circle **SA**.
If you **agree** with the statement   circle **A**.
If you **disagree** with the statement   circle **D**.
If you **strongly disagree** with the statement circle **SD**.

1.	On the whole, I am satisfied with myself.	SA	A	D	SD
2.	At times, I think I am no good at all.	SA	A	D	SD
3.	I feel that I have a number of good qualities.	SA	A	D	SD
4.	I am able to do things as well as most other people.	SA	A	D	SD
5.	I feel I do not have much to be proud of.	SA	A	D	SD
6.	I certainly feel useless at times.	SA	A	D	SD
7.	I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
8.	I wish I could have more respect for myself.	SA	A	D	SD
9.	All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
10.	I take a positive attitude toward myself.	SA	A	D	SD

Scoring.
Items 1,3,4,7 & 10 are scored :   SA=3, A=2, D=1, SD=0.
Items 2, 5, 6, 8 & 9 are reverse scored :   SA=0, A=1, D=2, SD=3.

Sum the scores for the 10 items. The higher the overall total, the greater the self esteem.

Appendix 2: Barratt Impulsivity Scale, Version 11 (Patton, Stanford, and Barratt, 1995)

DIRECTIONS: People differ in the ways they act and think in different situations. This is a test to measure some of the ways in which you act and think. Read each statement and put an X on the appropriate circle on the right side of this page. Do not spend too much time on any statement. Answer quickly and honestly.

1- Rarely/Never   2- Occasionally   3- Often 4- Almost Always/Always

1   I plan tasks carefully.   1 2 3 4

2   I do things without thinking.   1 2 3 4

3   I make-up my mind quickly.   1 2 3 4

4   I am happy-go-lucky.   1 2 3 4

5   I don't "pay attention."   1 2 3 4

6   I have "racing" thoughts.   1 2 3 4

7   I plan trips well ahead of time.   1 2 3 4

8   I am self controlled.   1 2 3 4

9   I concentrate easily.   1 2 3 4

10 I save regularly.   1 2 3 4

11 I "squirm" at plays or lectures.   1 2 3 4

12 I am a careful thinker.   1 2 3 4

13 I plan for job security.   1 2 3 4

14 I say things without thinking.   1 2 3 4

15 I like to think about complex problems.   1 2 3 4

16 I change jobs.   1 2 3 4

17 I act "on impulse."   1 2 3 4

18 I get easily bored when solving thought problems.   1 2 3 4

19 I act on the spur of the moment. 1 2 3 4

20 I am a steady thinker.   1 2 3 4

21 I change residences.   1 2 3 4

22 I buy things on impulse.   1 2 3 4

23 I can only think about one thing at a time.   1 2 3 4

24 I change hobbies.   1 2 3 4

25 I spend or charge more than I earn.   1 2 3 4

26 I often have extraneous thoughts when thinking.   1 2 3 4

27 I am more interested in the present than the future.   1 2 3 4

28 I am restless at the theater or lectures.   1 2 3 4

29 I like puzzles.   1 2 3 4

30 I am future oriented.   1 2 3 4

Scoring:

1= Rarely/Never

2= Occasionally

3= Often

 4= Almost always/Always

Reversed scoring on items- 1 , 7 , 8 , 9 , 10 , 12 , 13 , 15 , 20 , 29 , 30

Sum the scores for the 30 items. The higher the score, the higher the respondent's level of impulsivity.

In addition to total score, components of impulsivity can be measured with this questionnaire.

2nd Order Factors	1st Order Factors	# of items	Items contributing to each subscale
Attentional	Attention	5	5, 9*, 11, 20*, 28
	Cognitive Instability	3	6, 24, 26
Motor	Motor	7	2, 3, 4, 17, 19, 22, 25

	Perseverance	4	16, 21, 23, 30*
Nonplanning	Self-Control	6	1*, 7*, 8*, 12*, 13*, 14
	Cognitive Complexity	5	10*, 15*, 18, 27, 29*
			*reverse scored items

(Patton et al. 1995)

Appendix 3: Alcohol Use Inventory (AUDIT)

If you suspect that you have a drinking or drug problem you should seek help from a health professional regardless of your score on this test. The following is a preliminary screening regarding alcohol use and does not replace in any way a formal psychiatric or psychological evaluation.

Points associated with each answer are listed below. Keep track of your points as you take this assessment.

1. How often do you have a drink containing alcohol?

(0) Never (Skip to Questions 9-10) (1) Monthly or less (2) 2 to 4 times a month (3) 2 to 3 times a week (4) 4 or more times a week

2. How many drinks containing alcohol do you have on a typical day when you are drinking?

(0) 1 or 2 (1) 3 or 4 (2) 5 or 6 (3) 7, 8, or 9 (4) 10 or more

3. How often do you have six or more drinks on one occasion?

(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily

4. How often during the last year have you found that you were not able to stop drinking once you had started?

(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily

5. How often during the last year have you failed to do what was normally expected from you because of drinking?

(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily

6. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

(0) Never (1) Less than monthly

(2) Monthly (3) Weekly (4) Daily or almost daily

7. How often during the last year have you needed an alcoholic drink first thing in the morning to get yourself going after a night of heavy drinking?

(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily

8. How often during the last year have you had a feeling of guilt or remorse after drinking?

(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily

9. Have you or someone else been injured as a result of your drinking?

(0) No (2) Yes, but not in the last year (4) Yes, during the last year

10. Has a relative, friend, doctor, or another health professional expressed concern about your drinking or suggested you cut down?

(0) No (2) Yes, but not in the last year (4) Yes, during the last year

Add up the points associated with your answers above. A total score of 8 or more indicates harmful drinking behavior and it is recommended you speak to your doctor or a mental health specialist.

Appendix 4: Electronic Survey Cover Sheet attached to online Survey

My name is John Cronin. I am a final year psychology student at Dublin Business School, and am conducting a research thesis on the link between alcohol use and aspects of personality. To gather data I have prepared the following survey.

It should take less than 5 minutes to complete, and I would greatly appreciate your participation!

* The survey contains a number of questions relating to alcohol misuse, which may be a sensitive issue for many people. If you begin the survey but do not wish to continue, you can withdraw at any time.

All responses are anonymous.

Please note that by completing the survey, you indicate that you understand the purpose of the study and agree to participate.

Appendix 5: Debriefing Note for Electronic Survey

Thank you for taking part in my research!

If you wish to contact me with any queries regarding the survey, you can email John at

If you have been affected by issues relating to alcohol use, and wish to seek advice or help, information can be found on the following websites.

Alcohol Ireland- www.alcoholireland.ie/get-help

Alcoholics Anonymous Ireland- www.alcoholicsanonymous.ie